What is claimed is:

1. A rotary printing machine comprising:

a plurality of printing units each for making printing in the same area on a paper web;

print-speed control means for changing print speed from a first speed to a second speed, which is different from the first speed, according to a predetermined speed change characteristic;

storage means in which a phase control characteristic is stored, said phase control characteristic being a characteristic of phase control between plate cylinders of said printing units preliminary set so as to compensate for misregistration between printed images of the printing units based on a registration fluctuation characteristic, which is a predictive characteristic of fluctuation in registration between the printed images of the printing units in the case where the print speed is changed according to the speed change characteristic; and

predictive registration modification means for modifying phase relation between the plate cylinders of said printing units according to the phase control characteristic stored in said storage means while the print speed is being changed by said print-speed control means.

2. A rotary printing machine comprising:

a plurality of printing units each for making printing in the same area on a paper web;

print-speed control means for changing print speed from a first speed to a second speed, which is different from the first speed, according to a predetermined speed change characteristic;

a database in which a phase control characteristic is stored, said phase control characteristic being a characteristic preliminary set for phase control between plate cylinders of said printing units so as to compensate for misregistration between printed images of said printing units based on a registration fluctuation characteristic, which is a predictive characteristic of fluctuation in registration between the printed images of said printing units, for each of particular printing conditions that affect the registration fluctuation characteristic, in the case where the print speed is changed according to the speed change characteristic;

input means via which printing conditions concerning the current printing is inputted; and

predictive registration modification means for selecting from among a plurality of phase control characteristics stored in said database an appropriate phase control characteristic according to the printing

conditions inputted via said input means, and for modifying phase relation of the plate cylinders between said printing units according to the selected phase control characteristic while the print speed is being changed by said print-speed control means.

3. A rotary printing machine as defined in claim 1 or 2, further comprising automatic registration modification means for detecting misregistration between images printed by said printing units, and for automatically modifying the phase relation so as to compensate for the detected misregistration.

4. A rotary printing machine comprising:

a printing device for printing images on a running continuous paper web at regular intervals;

a cutting device for cutting the paper web into predetermined areas including the individual images, respectively, at a speed synchronized with the print speed;

print-speed control means for changing print speed from a first speed to a second speed, which is different from the first speed, according to a predetermined speed change characteristic;

running-length modification means for modifying a running length of the paper web from said printing section to said cutting device;

storage means in which a running-length control characteristic is stored, said running-length control characteristic being a characteristic preliminary set for control of the running length so as to compensate for cut misregistration of said cutting device based on a cut-registration fluctuation characteristic, which is a predictive fluctuation characteristic of cut registration of a cutting position by said cutting device with respect to a reference position in the case where the print speed is changed according to the speed change characteristic; and

predictive cut-registration modification means for modifying the running length by controlling said running-length modification means according to the running-length control characteristic stored in said storage means while the print speed is being changed by said print-speed control means.

5. A rotary printing machine comprising:

a printing device for printing images on a running continuous paper web at regular intervals;

a cutting device for cutting the paper web into predetermined areas including the individual images, respectively, at a speed synchronized with the print speed;

print-speed control means for changing print speed from a first speed to a second speed, which is

different from the first speed, according to a predetermined speed change characteristic;

running-length modification means for modifying a running length of the paper web from said printing section to said cutting device;

a database in which a running-length control characteristic is stored, said running-length control characteristic being a characteristic preliminary set for control of the running length so as to compensate for cut misregistration of said cutting device based on a cut-registration fluctuation characteristic, which is a predictive fluctuation characteristic of cut registration of a cutting position by said cutting device with respect to a reference position, for each of particular printing conditions that affect the registration fluctuation characteristic, in the case where the print speed is changed according to the speed change characteristic;

input means via which printing conditions concerning the current printing is inputted; and

predictive cut-registration modification means for selecting from among a plurality of running-length control characteristics stored in said database one running-length control characteristic based on the printing conditions inputted via said input means, and for modifying the running length by controlling said running-length modification means according to the

selected running-length control characteristic while the print speed is being changed by said print-speed control means.

6. A rotary printing machine as defined in claim 4 or 5, further comprising automatic cut-registration modification means for detecting cut misregistration of a cutting position by said cutting device with respect to a reference position, and for automatically modifying the running length by so as to compensate for the detected misregistration by controlling said running-length modification means.

7. A printing machine comprising:

an ink supplying device for supplying ink;

a plurality of ink rollers for transferring the ink sequentially from said ink supplying device to a plate cylinder;

print-speed control means for changing print speed from a first speed to a second speed, which is different from the first speed, according to a predetermined speed change characteristic;

storage means in which an ink-supply control characteristic is stored, said ink-supply control characteristic being a characteristic preliminary set for control of ink supply from said ink supplying device so as to compensate for variation in print

density based on a print-density variation characteristic, which is a predictive characteristic of variation in print density in the case where the print speed is changed according to the speed change characteristic; and

ink-supply control means for controlling an amount of ink supply from said ink supplying device;

said ink-supply control means being operable to control the amount of ink supplied from said ink supplying device according to the print speed during the constant-speed operation, and to adjust the amount of ink supplied from said ink supplying device according to the ink-supply control characteristic stored in said storage means during a predetermined period between a instant before said print-speed control means starts changing of the print speed and another instant after the changing of the print speed ends.

8. A printing machine comprising:

an ink bottle containing ink;

an ink-source roller, incorporated in said ink bottle, for controlling an amount of ink supply from said ink bottle in terms of the rotational speed;

a plurality of ink keys, incorporated in said ink bottle together with said ink-source roller and arranged axially of said ink-source roller, for

controlling the amount of ink supplied from said ink bottle in terms of the openness of a gap with respect to said ink-source roller;

a plurality of ink rollers for transferring ink sequentially from said ink-source roller to a plate cylinder;

print-speed control means for changing print speed from a first speed to a second speed, which is different from the first speed, according to a predetermined speed change characteristic;

storage means in which a rotational-speed control characteristic is stored, said rotational-speed control characteristic being a characteristic preliminary set for control of the rotation speed of said ink-source roller with respected to time so as to compensate for the variation in print density based on a print-density variation characteristic, which is a predictive characteristic of the variation in print density in the case where the print speed is changed according to the speed change characteristic; and

rotational-speed control means for controlling the rotational speed of said ink-source roller;

said rotational-speed control means being operable to control the rotational speed of said ink-source roller according to the print speed during constant-speed operation, and to adjust the rotational

speed of said ink-source roller according to the rotational-speed control characteristic stored in said storage means during a predetermined period between a instant before said print-speed control means starts changing of the print speed and another instant after the changing of the print speed ends.

9. A printing machine as defined in claim 8, wherein said storage means is a database in which the rotational-speed control characteristic is stored for each image area ratio, said rotational-speed control characteristic being preliminary set based on a print-density variation characteristic predicted for each image area ratio;

said rotational-speed control means being operable, during the predetermined period, to select from among a plurality of rotational-speed control characteristics stored in said database one rotational-speed control characteristic according to a mean image area ratio of the printed product of the current printing, and to adjust the rotational speed of said ink-source roller according to the selected rotational-speed control characteristic.

10. A printing machine as defined in claim 8, further comprising openness control means for controlling the openness of said ink keys;

said storage means storing the rotational-speed control characteristic, which is a characteristic set for control of the rotational speed of said ink-source roller with respect to time in the case where the image area rate is equal to a predetermined reference image area rate, and the openness control characteristic, which is a characteristic set for control of openness of the ink keys with respect to deviation of the image area rate from the reference image area rate, said rotational-speed control characteristic and said openness control characteristic being set based on the print-density variation characteristic predicted for each image area ratio;

said rotational-speed control means being operable to adjust the rotational speed of said ink-source roller according to the rotational-speed control characteristic stored in said storage means during the predetermined period;

said openness control means being operable to modify openness of each of said ink keys according to the openness control characteristic stored in said storage means in proportion to distribution of the image area rate along a width of the printed product of the current printing during the predetermined period.